PATENT **040053/QUALP837US**

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Date: January 27, 2009 /Rebecca Stanford/
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of:			
Applicant(s):	Joseph Patrick Burke, *et al.*	Examiner:	Richard Chan
Serial No:	10/723,664	Art Unit:	2618
Filing Date:	November 25, 2003		

Title: METHOD FOR REDUCING POWER CONSUMPTION IN A MULTI-MODE DEVICE

Mail Stop Appeal Brief – Patents
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APPEAL BRIEF

Dear Sir:

Appellants' representative submits this brief in connection with an appeal of the above-identified patent application. A credit card payment form is filed concurrently herewith in connection with all fees due regarding this appeal brief. In the event any additional fees may be due and/or are not covered by the credit card, the Commissioner is authorized to charge such fees to Deposit Account No. 50-1063 [QUALP837US].

I. Real Party in Interest (37 C.F.R. §41.37(c)(1)(i))

The real party in interest in the present appeal is Qualcomm Incorporated, the assignee of the present application.

II. Related Appeals and Interferences (37 C.F.R. §41.37(c)(1)(ii))

Appellants, appellants' legal representative, and/or the assignee of the present application are not aware of any appeals or interferences which may be related to, will directly affect, or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. Status of Claims (37 C.F.R. §41.37(c)(1)(iii))

Claims 1, 2, 4-14, 16, 20-25, 27 and 28 are currently pending in the subject application and are presently under consideration. Claims 3, 15, 17-19, and 26 have been canceled. Claims 1, 2, 4-14, 16, 20-25, 27 and 28 stand rejected by the Examiner. The rejection of claims 1, 2, 4-14, 16, 20-25, 27 and 28 is being appealed.

IV. Status of Amendments (37 C.F.R. §41.37(c)(1)(iv))

An amendment of claim 25 was made subsequent to the Final Office Action Dated August 11, 2008, to place the claim in better form for consideration on appeal in accordance with 37 C.F.R. §1.116(b)(2) by presenting clearer language under 35 U.S.C. §112, sixth paragraph. This amendment was made in the "Reply to Final Office Action Dated August 11, 2008" submitted on October 10, 2008. This amendment was entered, and claim 25 presented herein reflects the claim currently pending with the entered amendment.

V. Summary of Claimed Subject Matter (37 C.F.R. §41.37(c)(1)(v))

Independent Claim 1

Independent claim 1 recites a method for synchronizing a wakeup schedule for a first communications module and a wakeup schedule for a second communications module in a wireless mobile unit. *See e.g.* p. 2 lines 29-30 (¶[0012]), p. 12 lines 21-27

(¶[0049]). The method of independent claim 30 includes computing a next wakeup time for the first communication module (*See* p. 13 lines 8-21(¶[0051]), Fig. 3 aspect 314; *see e.g.* p. 9 lines 11-14 (¶[0037] lines 11-14)), the computing act is based at least in part on a time period set by the wireless mobile unit. *See* p. 12 lines 28-33 – p. 13 lines 1-7 (¶[0050]), Fig. 3 aspect 312; *see e.g.* p. 9 lines 1-6 (¶[0037] lines 1-6). Independent claim 1 further includes computing a next wakeup time for the second communication module. *See* p. 13 lines 8-21(¶[0051]), Fig. 3 aspect 314; *see e.g.* p. 9 lines 6-11 (¶[0037] lines 6-11). Independent claim 1 moreover recites synchronizing a new wakeup time for the second communication module to the next wakeup time for the first communication module when said next wakeup time for the first communication module is earlier than the next wakeup time for the second communication module. *See* Fig. 3 aspect 320 *via* aspect 316; s*ee e.g.* p. 13 lines 31-33 – p. 14 lines 1-5 (¶[0053]), p. 9 lines 22-33 (¶[0039]).

Independent Claim 2

Independent claim 2 relates to a method for synchronizing a wakeup schedule for an Ultra-Wideband (hereinafter "UWB") module and a wakeup schedule for a communications module in a wireless mobile unit. *See e.g.* p. 2 lines 29-30 (¶[0012]), p. 12 lines 21-27 (¶[0049]). The method of claim 2 includes calculating a next communications wakeup time based at least in part on a time period set by the wireless mobile unit. *See* p. 12 lines 28-33 – p. 13 lines 8-21(¶¶[0050]-[0051]), Fig. 3 aspects 314, 312; *see e.g.* p. 9 lines 1-6, 11-14 (¶[0037] lines 1-6, 11-14). Claim 2 further recites calculating a next UWB wakeup time. *See* p. 13 lines 8-21 ¶[0051], Fig. 3 aspect 314; *see e.g.* p. 9 lines 6-11 (¶[0037] lines 6-11). Additionally, independent claim 2 includes synchronizing a new UWB wakeup time to said next communications wakeup time when said next communications wakeup time is earlier than the next UWB wakeup time. *See* Fig. 3 aspect 320 *via* aspect 316; *see e.g.* p. 13 lines 31-33 – p. 14 lines 1-5 (¶[0053]), p. 9 lines 22-33 (¶[0039]).

Independent Claim 9

Independent claim 9 relates to a method for synchronizing a wakeup schedule for a UWB module and a wakeup schedule for a communications module in a wireless mobile unit. *See e.g.* p. 2 lines 29-30 (¶[0012]), p. 12 lines 21-27 (¶[0049]). The method of claim 9 recites determining a current communications time from a received pilot signal transmitted by a base station. *See* p. 12 lines 28-33 – p. 13 lines 1-7 (¶[0050]), Fig. 3 aspect 312; *see e.g.* p. 8 lines 1-8 (¶[0034] lines 1-8). Claim 9 further includes determining a current UWB time from an internal clock in the UWB module. *See* Fig. 1 aspect 158; *see e.g.* p. 7 lines 14-17 (¶[0031]), p. 8 lines 25-27 (¶[0036] lines 1-3). Independent claim 9 also recites calculating a communications interval, said communications interval equaling a next communications wakeup time less said current communications time. *See* Fig. 3 aspect 316; *see e.g.* p. 13 lines 31-33 – p. 14 lines 1-5 (¶[0053]), p. 9 lines 18-21 (¶[0038] lines 4-7). Claim 9 further includes synchronizing a new UWB wakeup time to said next communications wakeup time when said current UWB time plus said communications interval is less than a next UWB time. *See* Fig. 3 aspect 320 *via* aspect 316; s*ee e.g.* p. 13 lines 31-33 – p. 14 lines 1-5 (¶[0053]), p. 9 lines 18-21 (¶[0038] lines 4-7), p. 9 lines 22-33 (¶[0039]).

Dependent Claim 12

Claim 12 depends from the method of claim 9 and further includes performing a UWB wakeup process and a communications wakeup process substantially at said new UWB wakeup time. *See* Fig. 3 aspect 322; *see* p. 14 lines 6-13 (¶[0054]).

Independent Claim 14

Independent claim 14 relates to a wireless mobile unit (*see* Fig. 1 aspect 140; *see e.g.* p. 6 lines 16-24 (¶[0028])) comprising a communications module configured to perform a communications wakeup process at a next communications wakeup time (*see* Fig. 1 aspect 144; *see e.g.* p. 6 lines 16-24 (¶[0028]), p. 8 lines 7-9 (¶[0034] lines 7-9), wherein said wakeup time is computed based at least in part on a set time period (*see e.g.* p. 9 lines 11-14 (¶[0037] lines 11-14)) and the communications module is further configured to receive a pilot signal and derive a current communications time from said

pilot signal. *See* p. 8 lines 1-8 (¶[0034] lines 1-8). Claim 14 further recites a UWB module configured to perform a UWB wakeup process, wherein the UWB module comprises a clock , said clock being configured to track a current UWB time. *See* Fig. 1 aspect 142; *see e.g.* p. 7 lines 8-11 (¶[0030] lines 8-11). Moreover, independent claim 14 recites a processor (*see* Fig. 1 aspect 146, *see e.g.* p. 6 lines 16-24 (¶[0028])) configured to synchronize a new UWB wakeup time to said next communications wakeup time when said next communications wakeup time is earlier than a next UWB wakeup time. *See* p. 9 lines 22-31 (¶[0039] lines 1-10).

Independent Claim 25

Amended independent claim 25 relates to a wireless unit (*see* Fig. 1 aspect 140; *see e.g.* p. 6 lines 16-24 (¶[0028]) comprising a means for storing data. *See* p. 15 lines 18-22 (¶[0060] lines 3-7). Claim 25 further includes a means for performing a communications wakeup process at a next communications wakeup time. *See* Fig. 1 aspects 142, 144, and 146; *see e.g.* p. 15 lines 16-25 (¶[0060]). Independent claim 25 also recites a means for computing the next communications wakeup time. *See* Fig. 1 aspect 146; *see e.g.* p. 15 lines 16-25 (¶[0060]). Additionally, claim 25 includes a means for synchronizing a new UWB wakeup time to said next communications wakeup time when said next communications wakeup time is earlier than a next UWB wakeup time. *See* Fig. 1 aspect 146; p. 13 lines 31-33 – p. 14 lines 1-5 (¶[0053]); *see e.g.* p. 15 lines 16-25 (¶[0060]).

Independent Claim 27

Independent claim 27 recites a digital signals processing apparatus (*see* p. 15 lines 6-11, 13-15 (¶[0059] lines 1-6, 8-10); *see e.g.* Fig. 1 aspect 140)) comprising a memory means for storing digital data. *See* p. 15 lines 18-22 (¶[0060] lines 3-7). Claim 27 also includes a digital signal processing means for interpreting digital signals (*see* Fig. 1 aspect 146, p. 15 lines 6-11, 13-15 (¶[0059] lines 1-6, 8-10)) to synchronize a wakeup schedule for a UWB module and a wakeup schedule for a communications module in a wireless mobile unit by computing a next communications wakeup time based at least in part on a set time period. *See* p. 13 lines 8-21(¶[0051]), Fig. 3 aspects 314, 312; *see e.g.*

p. 9 lines 1-6, 11-14 (¶[0037] lines 1-6, 11-14). The synchronization of claim 27 through the digital signal processing means further includes synchronizing a new UWB wakeup time to said next communications wakeup time when said next communications wakeup time is earlier than a next UWB wakeup time. *See* Fig. 3 aspect 320 *via* aspect 316; *see e.g.* p. 13 lines 31-33 – p. 14 lines 1-5 (¶[0053]), p. 9 lines 22-33 (¶[0039]).

VI. Grounds of Rejection to be Reviewed (37 C.F.R. §41.37(c)(1)(vi))

A. Claims 9-11, 13, 24, and 25 stand rejected under 35 U.S.C. §102(b) as being anticipated by Ito, *et al.* (EP 1 089 578 A2).

B. Claims 1, 2, 4-8, 12, 14, 16, 20-23, 27, and 28 stand rejected under 35 U.S.C. §103(a) as being obvious over Ito, *et al.* (EP 1 089 578 A2) in view of Mayo, *et al.* (US 6,571,111).

VII. Argument (37 C.F.R. §41.37(c)(1)(vii))

A. Rejection of Claims 9-11, 13, 24, and 25 Under 35 U.S.C. §102(b)

Claims 9-11, 13, 24, and 25 stand rejected under 35 U.S.C. §102(b) as being anticipated by Ito, *et al.* (EP 1 089 578 A2) (hereinafter "Ito"). This rejection should be withdrawn for at least the following reasons. Ito fails to disclose each and every element of the subject claims.

> For a prior art reference to anticipate, 35 U.S.C. §102 requires that "each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950 (Fed. Cir. 1999) (*quoting Verdegaal Bros., Inc. v. Union Oil Co.*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)).

Claims 9-11 and 13

Independent claim 9 relates to a method for synchronizing a wakeup schedule for a UWB module and a wakeup schedule for a communications module in a wireless

mobile unit. The synchronization occurs when a current UWB time plus a calculated communications interval of the communications module is less than a next UWB time. To this end claim 9 recites in part: *determining a current communications time from a received pilot signal transmitted by a base station; determining a current UWB time from an internal clock in the UWB module;* ***calculating a communications interval****, said communications interval* ***equaling a next communications wakeup time less said current communications time****; and* ***synchronizing a new UWB wakeup time to said next communications wakeup time when said current UWB time plus said communications interval is less than a next UWB time****.* Ito fails to disclose such claimed aspects.

Ito relates to "a mobile radio communication terminal for selectively using a plurality of radio communication systems to perform radio communication." *See* Ito ¶[0001]. In addition, Ito discusses a system that sets the wait operation period of a Bluetooth (hereinafter "BT") system to coincide with the wait operation period of a W-CDMA system. *See* Ito ¶[0049]. The wait operation period of the W-CDMA system depends on the timing of frames sent by a base station to the W-CDMA device. *See* Ito ¶[0049]. Furthermore, Ito recites in part: "the wait operation period according to the W-CDMA system depends on the timing of frames sent from the base station while the wait operation period according to the BT system can be arbitrarily set by the originating apparatus." *See* Ito ¶[0049]. Additionally, Ito discusses: "The wait period setting control means 111 supervises the leading edge of a wait operation period according to the W-CDMA system during intermittent reception in wait operation." *See* Ito ¶[0051]. Conversely, Ito terminates the wait operation period of the BT system upon the detection of the trailing edge of the W-CDMA wait operation period. *See* Ito ¶[0051]. Ito continues and discusses that the wait operation period according to the BT system is started with the detection of the leading edge of the wait operation period of the W-CDMA system. *See* Ito Fig. 9, ¶¶[0051]-[0052]. In particular, once the wait operation period for the W-CDMA system is reached in Ito (*see* Ito Fig. 9 aspect 9a), the wait operation for the W-CDMA system starts (*see* Ito Fig. 9 aspect 9c). The wait operation according to the BT system is only started upon the detection of the leading edge (*see* Ito Fig. 9 aspect 9d) of the wait operation of the W-CDMA system. As such, Ito fails to disclose ***calculating a communications interval****, said communications interval* ***equaling***

a next communications wakeup time less said current communications time*; and* ***synchronizing a new UWB wakeup time to said next communications wakeup time when said current UWB time plus said communications interval is less than a next UWB time***, as recited in independent claim 9.

In contrast to appellants' claimed subject matter, Ito relies on triggering a wait operation period of the BT system and terminating such operation *by detecting the wait operation period of the W-CDMA*. As discussed *supra,* Ito waits until the wait operation period for the W-CDMA system begins before it will begin the wait operation period for the BT system. Thus, rather than *calculating* the communication interval and using this calculated communication interval to synchronize wakeup times, Ito merely discloses *waiting for the detection* of the start of the W-CDMA system before starting the wait period of the BT system. Thus, the Ito wait period setting control means detects the leading edge of the wait operation period of the W-CDMA system, and starts the wait operation period of the BT to "synchronize" the two Ito systems. Similarly, Ito terminates the wait operation period of the BT in synchronization of the trailing edge of the W-CDMA wait operation period. Therefore, because Ito uses the detection of the leading edge to trigger the wait operation of the BT system and terminates the wait operation upon the detection of the trailing edge, Ito fails to disclose *calculating a communications interval, said communications interval equaling a next communications wakeup time less said current communications time; and synchronizing a new UWB wakeup time to said next communications wakeup time when said current UWB time plus said communications interval is less than a next UWB time*.

In the Advisory Action Dated November 18, 2008 (hereinafter "Advisory Action"), the Examiner asserts that the communication interval of the claimed subject matter is disclosed as the "wait operation period" as discussed in Ito. *See* Advisory Action p. 2. The Examiner further asserts that the communications wakeup time of the present application is the "terminating of the operation period," and that current communication time of the present application is the equivalent to the "operation time" of Ito. *See* Advisory Action p. 2. As such, the Examiner asserts in the Advisory Action that the Ito reference "teaches wherein the wait operation period is equivalent to when the communication wakeup time is activated by encountering [sic] the 'terminating wait

period' command, therefore becomes an active communication system. Simply meaning, the wait operation period is equal to the difference of wakeup time from the active communication period." *See* Advisory Action p. 2. Such assertions further emphasize the lack of disclosure of each and every aspect of the appellants' claimed subject matter.

Assuming *arguendo* that the aforementioned assertions from the Advisory Action are correct, such assertions fail to explain the deficiency of Ito with respect to disclosing each and every aspect of the appellants' claimed subject matter. Such assertions merely illustrate the Examiner constructing a time interval out of aspects of Ito asserted to be equivalent to appellants' subject claims. However, the Examiner constructing such time interval fails to cure the deficiencies of Ito because, as discussed *supra,* claim 9 recites ***calculating*** *a communications interval* and such *calculated* interval is the basis for synchronization of the new UWB time with the next communications wakeup time. Ito fails to disclose *calculating* such interval asserted in the Advisory Action. Thus, the assertions of the Advisory Action further emphasize that Ito fails disclose each and every aspect of claim 9.

In view of the forgoing, it is readily apparent that Ito fails to disclose each and every aspect of the appellants' claimed subject matter as recited in claim 9. To this end, it is respectfully requested that the rejection of claim 9, and claims 10, 11, and 13 that depend therefrom be withdrawn.

Claim 24

Claim 24 is patentable for at least the same reasons as claim 14 from which it depends as discussed, *infra*. Furthermore, the Office Action Dated August 11, 2008 (hereinafter "Office Action) concedes that Ito fails to disclose *computing a next wakeup time for the first communication module, the computing act is based at least in part on a time period set by the wireless mobile unit*. *See* Office Action p. 7. Because claim 24 depends from claim 14, and the Office Action concedes that Ito fails to disclose each and every aspect of claim 14, claim 24 cannot be anticipated by Ito. It is respectfully requested that the rejection of claim 24 be withdrawn.

Claim 25

Amended independent claim 25 relates to a wireless unit that synchronizes a new UWB wakeup time when a next communications wakeup time is earlier than a next UWB wakeup time. Claim 25 recites that the next communications wakeup time is determined by a means for computing the next communication wakeup time. To this end, claim 25 recites: *means for storing data; means for performing a communications wakeup process at a next communications wakeup time;* ***means for computing the next communications wakeup time****; and* ***means for synchronizing a new UWB wakeup time to said next communications wakeup time when said next communications wakeup time is earlier than a next UWB wakeup time***. Ito fails to disclose such aspects.

As discussed in detail above, Ito merely relates to triggering the wait operation period of the BT system when the leading edge of the wait operation period for the W-CDMA is detected and terminating the "synchronized" BT system when the trailing edge of the W-CDMA system is detected. Thus, Ito fails to disclose that it retains a *means for* ***computing*** *the next communications wakeup time*, and the computation of this next communications wakeup time is utilized by the means for synchronizing a new UWB time when the computed next communications wakeup time is earlier than the next UWB wakeup time. To this end, it is readily apparent that Ito fails to disclose each and every aspect of claim 25, and it is respectfully requested that the rejection of this claim be withdrawn.

In view of at least the foregoing, appellants' representative respectfully requests this rejection of claims 9-11, 13, and 24-25 be withdrawn.

B. Rejection of Claims 1, 2, 4-8, 12, 14, 16, 20-23, 27, and 28 Under 35 U.S.C. §103(a)

Claims 1, 2, 4-8, 12, 14, 16, 20-23, 27, and 28 stand rejected under 35 U.S.C. §103(a) as being obvious over Ito in view of Mayo, *et al.* (US 6,571,111) (hereinafter "Mayo"). It is respectfully requested that this rejection be withdrawn for at least the following reasons. Ito and Mayo, alone or in combination, fail to teach or suggest each and every aspect of the appellants' claimed subject matter.

Claim 1

Independent claim 1 relates to a method for synchronizing a wakeup schedule for a first communications module and a wakeup schedule for a second communications module in a wireless mobile unit. Such method computes a next wakeup time for the first communication module and computes a next wakeup time for a second communications module. The method recites the synchronization of a new wakeup time for the second communications module with the next communication time of the first communication module based on the relative temporal aspect of such computed times. To this end, claim 1 recites in part: ***computing*** *a next wakeup time for the first communication module,* ***the computing act is based at least in part on a time period set by the wireless mobile unit****; computing a next wakeup time for the second communication module; and synchronizing a new wakeup time for the second communication module to the next wakeup time for the first communication module when said next wakeup time for the first communication module is earlier than the next wakeup time for the second communication module.* Ito and Mayo, alone or in combination, fail to teach or suggest such aspects.

On page 5 of the Office Action, it is conceded that Ito fails to disclose ***computing*** *a next wakeup time for the first communication module, the* ***computing act is based at least in part on a time period set by the wireless mobile unit****.* Mayo fails to cure such deficiency. Mayo relates to "decreasing power consumption of nodes of the network that have a limited capacity power source." *See* Mayo col. 1 lines 10-11. Each node of Mayo is a communication device, such as a pager, cellular telephones, and personal digitals assistants. *See* Mayo col. 1 lines 16-18; col 2 lines 58-61. Mayo discusses that the transmission and receipt of data between the nodes of its system is done during awake periods. *See* Mayo col. 2 lines 21-22. Power consumption of the nodes of Mayo is reduced during the sleep period. *See* Mayo col. 2 lines 23-24. To accomplish the reduction in power consumption of the nodes of Mayo, the awake and sleep periods are synchronized to a basic timing interval. *See* Mayo col. 2 lines 24-25. Synchronizing the awake and sleep periods of the nodes ensures that the nodes transmitting data are synchronously awake. Mayo discusses that the reduction of consumption of power is accomplished by synchronizing the timing intervals of the nodes through an external timing signal and thus reducing the consumption of power by using an external timing

source to generate the signal. *See* Mayo col. 4 lines 3-17. In particular, Mayo discusses: "A real-time clock in each device is synchronized to the periodically received timing signal. The real-time clock determining a basic synchronized timing interval." *See* Mayo col. 2 lines17-20. Yet, Mayo fails to disclose *computing a next wakeup time for the first communication module, the computing act is based at least in part on a time period set by the wireless mobile unit.*

Rather, in Mayo an oscillator serves as the real-time clock (*see* Mayo col. 3 lines 36-39), and this real-time clock of Mayo is periodically synchronized with an external signal. While the real time clock determines the basic synchronized timing interval for the awake and sleep periods of the nodes of Mayo, such determination is synchronization of the predetermined time interval in the real-time clocks of Mayo through receipt of a periodic timing signal. Thus, the synchronized timing interval *is not computed*, but merely established through timing signal originating from an external source.

It should be appreciated that the passages of Mayo cited on page 5 of the Office Action, fail to teach or suggest *computing*. Instead, Mayo describes a timing diagram and a basic timing interval illustrating "awake" and "sleep" modes. *See* Mayo Fig. 3 element 310; col. 3 lines 49-63. Even though the reference passage discloses that "[t]he length of the interval 310 can be an arbitrary amount of time … [s]horter and longer intervals can be selected depending on the desired latency", nothing in the passage describes or suggests *a computing* act of any sort. In turn as previously discussed, Mayo describes synchronization aspects driven by an "external timing source 110." *See* Mayo col. 4 lines 3-17. Further, the Office Action even concedes that the time between the wakeup modes or "basic timing interval" in Mayo is a predetermined set amount of time. *See* Office Action p. 5. Coupling the basic timing interval with the externally driven synchronization from timing signals, and it is readily apparent that Mayo fails to teach or suggest a *computing act*, let alone ***computing*** *a next wakeup time for the first communication module, the* ***computing act is based at least in part on a time period set by the wireless mobile unit.*** Therefore, it is respectfully submitted that Ito and Mayo, alone or in combination, fail to teach or suggest each and every aspect recited in independent claim 1.

Moreover, the assertions discussed *supra* with respect to the Advisory Action are directed specifically to claim 1 (in addition to claim 9). As previously discussed, the assertions of the Advisory Action relate to the Examiner constructing a time interval from Ito out of aspects asserted to be equivalent to appellants' subject claims. However, as previously discussed with respect to claim 1, Ito fails at ***calculating*** *a communications interval*. Similarly, with respect to *calculating from* claim 9, the construction of a time interval out of aspects asserted to be the same as appellants' claimed subject matter fails at ***computing*** *a next wakeup time for the first communication module*. Furthermore, as previously mentioned, the Office Action cedes that Ito fails to specifically disclose computing a next wakeup time for the first communications module. *See* Office Action p. 5.

In view of the foregoing, it is readily apparent that the Ito and Mayo, alone or in combination, fail to teach or suggest each and every aspect of the appellants' claimed subject matter. It is respectfully requested that the rejection of claim 1 be withdrawn.

Claims 2 and 4-8

Appellants' claimed subject matter further relates to method for synchronizing a wakeup schedule for an UWB module and a wakeup schedule for a communications module in a wireless mobile unit. Appellants' subject matter relates to calculating a next wakeup time for the communication module and also calculates a next wakeup time for a UWB module. The method recites the synchronization of a new wakeup time for the UWB module with the next communication time of the communication module based on whether the next communication time precedes the next UWB wakeup time. To this end, independent claim 2 recites in part: ***calculating*** *a next communications* ***wakeup time based at least in part on a time period*** *set by the wireless mobile unit; calculating a next UWB wakeup time; and synchronizing a new UWB wakeup time to said next communications wakeup time when said next communications wakeup time is earlier than the next UWB wakeup time*. As discussed in detail above with respect to claim 9, Ito fails to teach or suggest *calculating a next communications wakeup time based at least in part on a time period*. Mayo fails to cure the deficiencies of Ito.

As previously discussed, Ito relies on triggering a wait operation period of the BT system and terminating such operation *by detecting the wait operation period of the W-CDMA*. In particular, the Ito wait period setting control means detects the leading edge of the wait operation period of the W-CDMA system, and starts the wait operation period of the BT. Similarly, Ito terminates the wait operation period of the BT in synchronization of the trailing edge of the W-CDMA wait operation period. Therefore, because Ito merely detects of the leading edge to trigger the wait operation of the BT system and terminates on the detection of the trailing edge, Ito fails to disclose ***calculating*** *a next communications* ***wakeup time based at least in part on a time period.***

Moreover, the Office Action concedes with respect to claim 1 that Ito fails to disclose ***computing*** *a next wakeup time for the first communication module, the computing act is based at least in part on a time period set by the wireless mobile unit.* A similar reasoning may be applied to the ***calculating*** *a next communications wakeup time based at least in part on a time period* as recited in claim 2 further reinforced by the discussion above relating to the failure of Ito to calculate anything because it merely relies on the detection of the edges of the wait period.

Mayo fails to cure the deficiencies because as discussed in detail, *supra,* Mayo merely relates to the use of an external timing signal sent to a plurality of communication devices (nodes) within a network to ensure that the predetermined basic timing intervals are synchronized. Thus, Mayo fails to cure the deficiencies of Ito.

In view of the foregoing, it is submitted that Ito and Mayo, alone or in combination, fail to teach or suggest each and every element recited in independent claim 2 and claims 4-8 that depend therefrom. It is respectfully requested that the rejection of claims 2 and 4-8 be withdrawn.

Claim 12

The subject claim depends from independent claim 9 and therefore is patentable for at least the same reasons. In particular, Ito fails to disclose each and every element of independent claim 9. Mayo fails to remedy the deficiency of Ito because Mayo fails to disclose the aspect of ***calculating a communications interval,*** *said communications interval* ***equaling a next communications wakeup time less said current***

communications time. As discussed above with respect to claim 2, it should be appreciated that no calculation is taught or suggested in Mayo. Predetermined basic timing intervals are determined through the architecture of a clock circuit (*see* Mayo Fig. 2 aspect 240) associated with each device (node) in a network of devices (nodes). Time intervals can be externally synchronized among the networked devices, but such synchronization amounts to establishment of a common time origin for the predetermined basic time intervals rather than *calculating a communications interval.* Therefore, in addition to being patentable for the reasons discussed above with respect to claim 9, it is respectfully submitted that Ito and Mayo, alone or in combination, fail to teach or suggest each and every element recited in dependent claim 12.

Claims 14, 16, and 20-23

Independent claim 14 relates to a wireless mobile unit with a communications module configured to perform a communications wakeup process at a next communications wakeup time where the next wakeup time is computed at least in part on a set time period. The wireless mobile unit includes a processor configured to synchronize a new UWB wakeup time based on the relative timing of the computed next wakeup time. To this end, independent claim 14 recites, in part: *a communications module configured to perform a communications wakeup process at a next communications wakeup time, wherein* ***said wakeup time is computed based at least in part on a set time period*** *and the communications module is further configured to receive a pilot signal and derive a current communications time from said pilot signal; a UWB module configured to perform a UWB wakeup process, wherein the UWB module comprises a clock, said clock being configured to track a current UWB time; and a processor configured to synchronize a new UWB wakeup time to said next communications wakeup time when said next communications wakeup time is earlier than a next UWB wakeup time.* As discussed in detail respect to claim 1, Ito and Mayo particularly fail to teach or suggest ***computing*** *a next wakeup time for the first communication module, the computing act is based at least in part on a time period set by the wireless mobile unit.* Thus, for the reasons discussed above, particularly with respect to claim 1 failing to compute the next wakeup time based in part on the set time

period, Ito and Mayo, alone or in combination fail to teach or suggest a communications module configured to perform a communications wakeup process at a next communications wakeup time, *wherein said wakeup time is* ***computed*** *based at least in part on a set time period.* To this end, it is apparent that Ito and Mayo fail to teach or suggest each and every aspect of claim 14, and it is respectfully requested that the rejection of claim 14, and claims 16 and 20-23 that depend therefrom, be withdrawn.

Claims 27 and 28

Appellants' claimed subject matter further relates to a digital signals processing apparatus. In particular, the digital processing apparatus includes a processing means that synchronizes a wakeup schedule for a UWB module and a wakeup schedule for a communications module by computing the next wakeup time for the communications module in part on a set time period. To this end, claim 27 recites in part: *a memory means for storing digital data; and* ***a digital signal processing means*** *for interpreting digital signals to synchronize a wakeup schedule for a UWB module and a wakeup schedule for a communications module in a wireless mobile unit by:* ***computing a next communications wakeup time based at least in part on a set time period****; and synchronizing a new UWB wakeup time to said next communications wakeup time when said next communications wakeup time is earlier than a next UWB wakeup time.* For at least the reasons set forth above, particularly with respect to claims 1 and 14, Ito and Mayo, alone or in combination, fail to teach or suggest such claimed aspects. In particular, the Office Action concedes that Ito fails to disclose *computing a next wakeup time for the first communication module, the computing act is based at least in part on a time period set by the wireless module unit. See* Office Action p. 9. As discussed above in detail with respect to claim 1, Mayo fails to cure the deficiency of Ito because Mayo merely relates to the use of an external timing signal sent to the communication devices within a network to ensure that the predetermined basic timing intervals are synchronized. Thus, Mayo fails to *compute* a next communications wakeup time based on a set time period and fails to cure the deficiency of Ito. To this end, it is respectfully submitted that Ito and Mayo, alone or in combination, fail to teach or suggest each and

every aspect of the claim 27, and it is respectfully requested that the rejection of claim 27, and claim 28 that depends therefrom, be withdrawn.

In view of at least the foregoing, it is respectfully submitted that Ito and Mayo, alone or in combination, fail to teach or suggest all of the aspects of claims 1, 2, 4-8, 12, 14, 16, 20-23, 27, and 28. Accordingly, appellants' representative respectfully requests this rejection of claims 1, 2, 4-8, 12, 14, 16, 20-23, 27, and 28 be withdrawn and the subject claims be allowed. Furthermore, although not specifically rejected in this section, claim 24 depends from claim 14 and therefore is patentable for the same reasons as claim 14.

C. Conclusion

For at least the above reasons, the claims currently under consideration are believed to be patentable over the cited references. Accordingly, it is respectfully requested that the rejections of claims 1, 2, 4-14, 16, 20-25, 27 and 28 be withdrawn.

If any additional fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063.

Respectfully submitted,

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VIII. Claims Appendix (37 C.F.R. §41.37(c)(1)(viii))

1. A method for synchronizing a wakeup schedule for a first communications module and a wakeup schedule for a second communications module in a wireless mobile unit, said method comprising:

computing a next wakeup time for the first communication module, the computing act is based at least in part on a time period set by the wireless mobile unit;

computing a next wakeup time for the second communication module; and

synchronizing a new wakeup time for the second communication module to the next wakeup time for the first communication module when said next wakeup time for the first communication module is earlier than the next wakeup time for the second communication module.

2. A method for synchronizing a wakeup schedule for a Ultra-Wideband (UWB) module and a wakeup schedule for a communications module in a wireless mobile unit, said method comprising:

calculating a next communications wakeup time based at least in part on a time period set by the wireless mobile unit;

calculating a next UWB wakeup time; and

synchronizing a new UWB wakeup time to said next communications wakeup time when said next communications wakeup time is earlier than the next UWB wakeup time.

3. (Canceled).

4. The method of claim 2 further comprising:

determining a current communications time; and

determining a current UWB time.

5. The method of claim 4 further comprising a step of determining a communications interval, said communications interval equaling said next communications wakeup time less said current communications time.

6. The method of claim 5 further comprising a step of synchronizing said new UWB wakeup time to said next communications wakeup time when said current UWB time plus said communications interval is less than said next UWB time.

7. The method of claim 2 further comprising a step of performing a UWB wakeup process and a communications wakeup process substantially at said new UWB wakeup time.

8. The method of claim 7 wherein said performing step comprises a step of powering on said UWB module and said communications module substantially simultaneously so as to reduce said wireless mobile unit's power consumption.

9. A method for synchronizing a wakeup schedule for a UWB module and a wakeup schedule for a communications module in a wireless mobile unit, said method comprising:

determining a current communications time from a received pilot signal transmitted by a base station;

determining a current UWB time from an internal clock in the UWB module;

calculating a communications interval, said communications interval equaling a next communications wakeup time less said current communications time; and

synchronizing a new UWB wakeup time to said next communications wakeup time when said current UWB time plus said communications interval is less than a next UWB time.

10. The method of claim 9 further comprising steps of:

establishing said next communications wakeup time prior to said step of calculating said communications time interval; and

establishing said next UWB wakeup time prior to said step of synchronizing said new UWB time.

11. The method of claim 9 further comprising a step of performing a UWB wakeup process and a communications wakeup process substantially at said new UWB wakeup time.

12. The method of claim 11 wherein said performing step comprises a step of powering on said UWB module and said communications module substantially simultaneously so as to reduce said wireless mobile unit's power consumption.

13. The method of claim 9 wherein said wireless mobile unit comprises a UWB-enabled communications mobile phone.

14. A wireless mobile unit comprising:

a communications module configured to perform a communications wakeup process at a next communications wakeup time, wherein said wakeup time is computed based at least in part on a set time period and the communications module is further configured to receive a pilot signal and derive a current communications time from said pilot signal;

a UWB module configured to perform a UWB wakeup process, wherein the UWB module comprises a clock, said clock being configured to track a current UWB time; and

a processor configured to synchronize a new UWB wakeup time to said next communications wakeup time when said next communications wakeup time is earlier than a next UWB wakeup time.

15. (Canceled).

16. The wireless mobile unit of claim 14 wherein said UWB module is configured to perform said UWB wakeup process at said new UWB wakeup time when said next communications wakeup time is earlier than said next UWB wakeup time.

17-19. (Canceled).

20. The wireless mobile unit of claim 14 wherein said processor is further configured to calculate a communications interval, said communications interval equaling said next communications wakeup time less said current communications time.

21. The wireless mobile unit of claim 20 wherein said processor is further configured to synchronize said new UWB wakeup time to said next communications wakeup time when said current UWB time plus said communications interval is less than said next UWB time.

22. The wireless mobile unit of claim 14 wherein said communications module performs said communications wakeup process and said UWB module performs said UWB wakeup process substantially at said new UWB wakeup time.

23. The wireless mobile unit of claim 22 wherein said communications module and said UWB module are configured to power on substantially simultaneously so as to reduce said wireless mobile unit's power consumption.

24. The wireless mobile unit of claim 14 wherein said wireless mobile unit is a UWB-enabled communications mobile phone.

25. A wireless unit comprising:

means for storing data;

means for performing a communications wakeup process at a next communications wakeup time;

means for computing the next communications wakeup time; and

means for synchronizing a new UWB wakeup time to said next communications wakeup time when said next communications wakeup time is earlier than a next UWB wakeup time.

26. (Canceled).

27. A digital signals processing apparatus, comprising:

a memory means for storing digital data; and

a digital signal processing means for interpreting digital signals to synchronize a wakeup schedule for a UWB module and a wakeup schedule for a communications module in a wireless mobile unit by:

computing a next communications wakeup time based at least in part on a set time period; and

synchronizing a new UWB wakeup time to said next communications wakeup time when said next communications wakeup time is earlier than a next UWB wakeup time.

28. The apparatus of claim 27, said digital signal processing means further interpreting digital signals to establish said next UWB wakeup time after said computing a next communications wakeup time based at least in part on a set time period, and before said synchronizing a new UWB wakeup time.

IX. Evidence Appendix (37 C.F.R. §41.37(c)(1)(ix))

None.

X. Related Proceedings Appendix (37 C.F.R. §41.37(c)(1)(x))

None.